

NASAL RECONSTRUCTION BY SCALPING FLAP IN A CASE OF MALIGNANT MELANOMA OF THE NASAL TIP

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CASE REPORT

IN early 1966 this 74-year-old retired white machinist noticed deepening pigmentation in a nevus at the tip of his nose, slightly to the right, which had been present and unchanged for 35 years. In October 1966 an excision biopsy of this 1.2-cm. lesion by a dermatologist showed malignant melanoma; at the same time deep curettage and electrodesiccation were carried out. Recurrence of melanoma in the scar was proved by biopsy five months later, and the patient was referred for definitive treatment and reconstruction. In view of the patient's vigorous health, his continuing responsibility for looking after his invalid wife, and in the absence of clinical or laboratory evidence of regional or distant metastases, it was felt that a curative procedure was indicated. Moreover, chance for cure existed uniquely in this case since, as Pack, Gerber, and Scharnagel had shown in 1952,¹ distant metastasis from melanoma in this location occurs late rather than early.

Wide local excision was performed on March 28, 1967 (Figure 1), and right radical neck and left suprahyoid dissections were done on April 22, 1967. None of the 69 nodes examined was positive. Because of subsequent biopsy-proved local recurrence (Figure 2) the wide nasal excision was extended across the midline on June 24, 1967. Finally, all that remained were small fragments of the right and left alae with intact cartilage remnants, an intact septal cartilage somewhat reduced in its anteroposterior dimension, and a narrow rim of skin at the glabella (Figure 3). Histologically, the specimen showed

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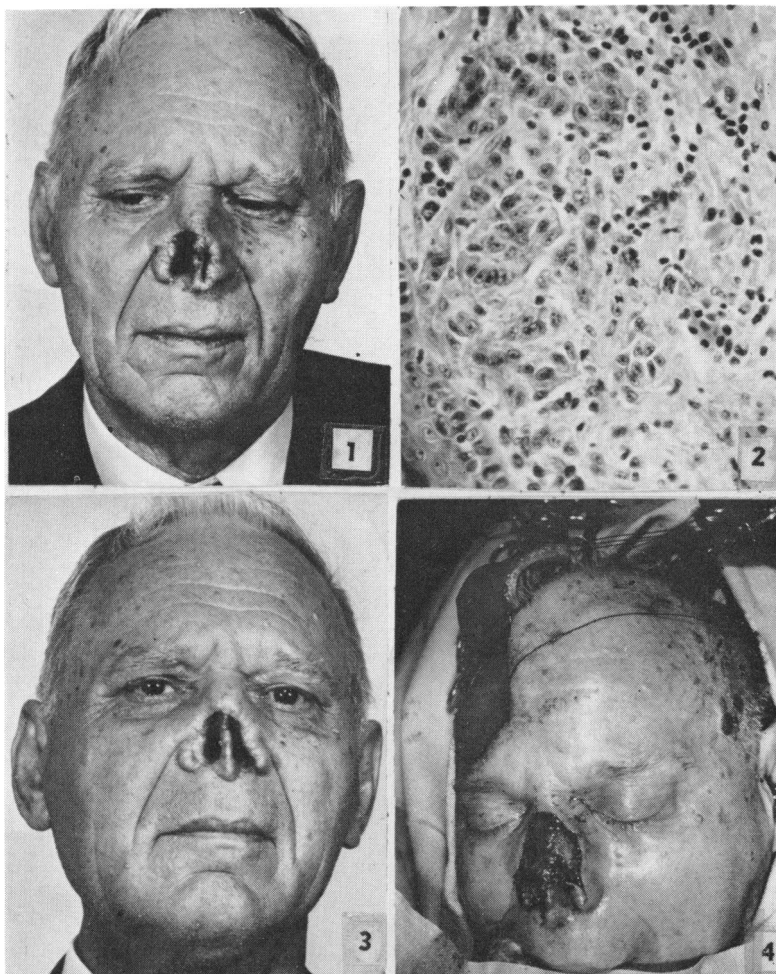


Fig. 1. A 74-year-old machinist; malignant melanoma of nasal tip; wide excision six months after onset and multiple recurrences despite curettage and electrodesiccation by a dermatologist.

Fig. 2. Histological appearance of recurrent tumor before reconstruction.

Fig. 3. Final wide excision of melanoma extending across midline. Note small remnants of alar cartilages and partial resection of septum.

Fig. 4. First-stage nasal reconstruction by scalping flap. Note local hinge flaps turned in for lining of new nose.

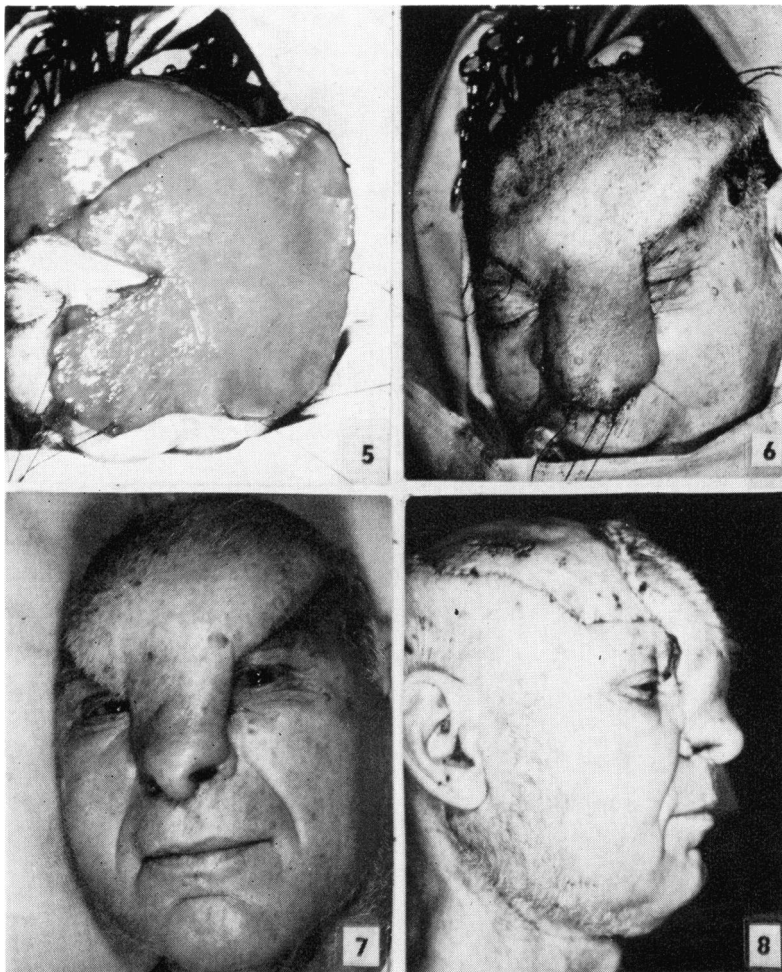


Fig. 5. Reflected scalping flap carrying lateral forehead donor tissue.

Fig. 6. Flap folded upon itself to carry forehead tissue to the nose. Donor defect is temporarily protected by split-thickness skin graft.

Fig. 7. Three weeks after notation of scalping flap (front view). Base of nasal portion being cross-clamped daily on days 17 to 23.

Fig. 8. Three weeks after flap rotation (side view). Note nostril margins folded in and split-thickness skin graft covering flap-donor site.

only cicatricial changes in the skin at the site of previous excision of melanoma.

Since there had been excellent wound healing and no further clinical or pathological evidence of tumor activity, nasal reconstruction by scalping flap was begun on July 25, 1967 (Figures 4, 5, 6). Local hinge flaps were turned in for partial lining of the new nose.

The pedicle was divided after cross-clamping for 10 minutes daily from the 17th to 23rd postoperative days (Figures 8 and 9) and the carrying flap returned to its bed on August 17, 1967. A full-thickness skin graft from the supraclavicular area was placed into the forehead donor defect.

After defatting and a Z-plasty to correct notching of the left alar inset of the flap, the contour of the nose was satisfactory until July 1968, when the patient complained of airway collapse (Figure 10). This was due to inadequate support of soft tissue at the tip. Accordingly, an 8th-rib cortical strut (6 cm. \times 1 cm.) was countersunk and wired into the nasal pyramids (Figure 11). An x ray confirmed that it was intact several months later.

The final result (Figures 12, 13, and 14) was characterized by well-supported airways and minor changes in external contours and skin pigmentation that blended with other facial features.

DISCUSSION

Authorities generally agree that malignant melanomas arise from the junctional cell nevus originally described by Traub and Keil in 1940.² This is a flat, sometimes slightly elevated, darkly pigmented, hairless lesion of the skin. It is so named because the nevus cells are located at the epidermal junction. Webster, Stevenson, and Stout (1944)³ found preexisting benign nevi in 65% of their cases of malignant melanoma, but this was not substantiated by Lund and Kraus (1962).⁴ Boyd⁵ notes that melanomas also originate in melanoblasts of the eye and, less commonly, in mucous membranes of the rectum, nose, or meninges.

For many years Unna's concept that the nevus cell was of epidermal origin (1893)⁶ had been accepted. He explained the lack of connection of the nevus cells with the epidermis by the postulate that they drop away from the epidermis to lie below it. Masson (1951)⁷ postulated an origin of the nevus cells from the cells of the

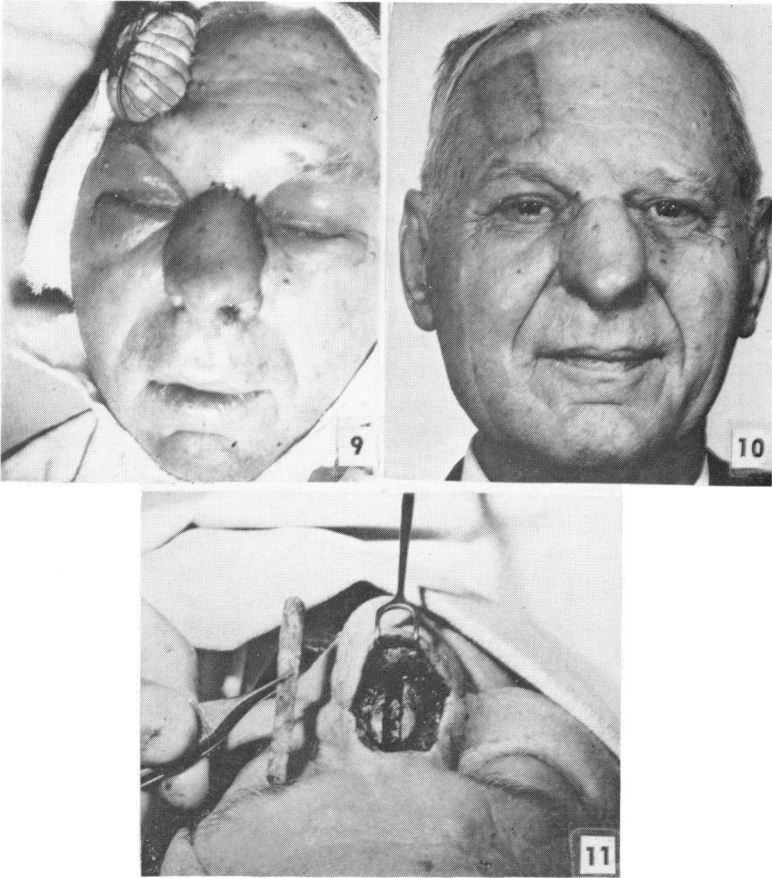


Fig. 9. Carrying portion of flap returned to original location after division at level of glabella. Split graft in lateral-forehead donor site.

Fig. 10. Ten months after scalping flap reconstruction. Satisfactory aesthetic result but patient had partial airway obstruction due to inadequate soft-tissue support at tip.

Fig. 11. Cortical rib graft being countersunk and wired into nasal pyramids to support tip.

sheath of Schwann. Montgomery and Kernohan (1940)⁸ studied 460 pigmented nevi and concluded that the nevus cell has multiple origins, the majority from epidermal elements and, in their series, 11% from neuroid cells.

Most of the nevi found on the soles, palms, and genitalia will be of the junctional variety (Pack, Lenson, and Gerber, 1952⁹). Malignant melanomas are found most frequently in these areas and also on

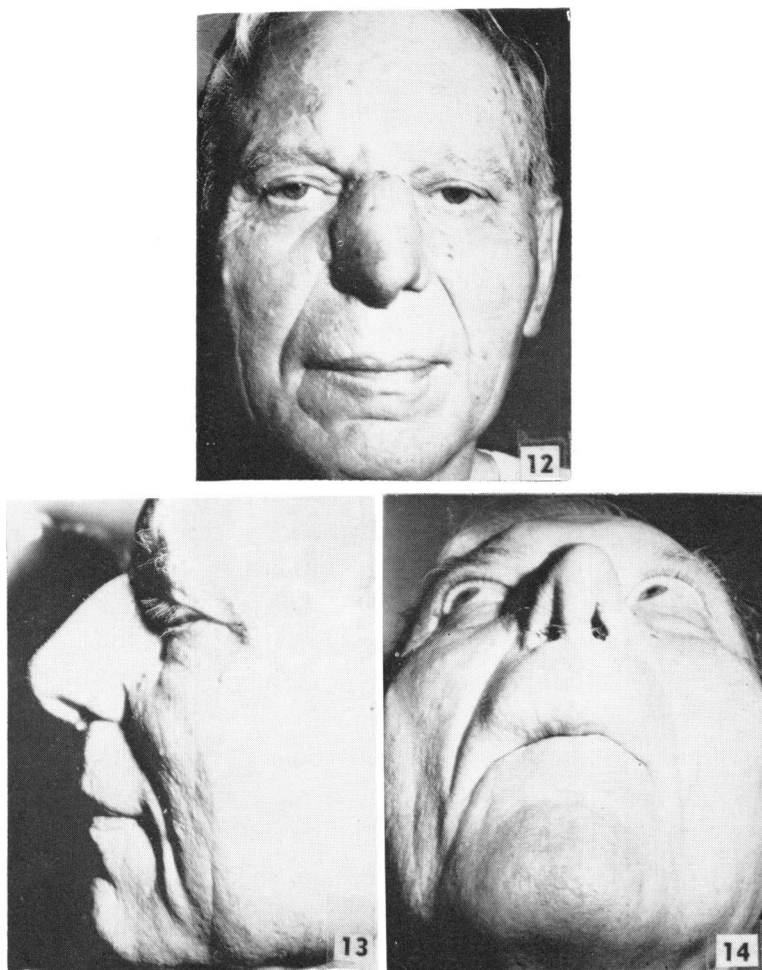


Fig. 12. Final result one year after construction of flap began.

Fig. 13. Final result (side view). External contours and skin pigmentation blend well with facial features and complexion.

Fig. 14. Final result (from below). Note well-supported tip.

the face and neck. The trauma and exposure to solar or other irradiation to which these areas are subject may bear upon the high incidence of melanoma in these sites. Much more rarely the malignancy may arise on the external skin of the nose, as in this patient, or from the mucous membrane of the nasal cavity.

Three clinical types of melanomas are recognized: 1) superficial:

a dark macular lesion located in the upper skin layers; 2) invasive: a firm, nodular, pigmented lesion fixed deeply within the skin; and 3) amelanotic: a nodular, firm lesion, attached to the skin, but without pigmentation.

The typical microscopic findings of melanoma include the presence of junctional activity, melanin pigmentation, invasion of surrounding tissues, and abnormal mitotic figures.

This patient demonstrated a classic stage in the evolution of melanoma: the sudden darkening of a pigmented scar of long standing. It is well known that any rapid change in color or size is ominous, especially in a nevus of the face or lower extremities.

Among those conditions from which malignant melanomas must be differentiated are pigmented basal-cell carcinomas, subungual hemorrhage, senile keratosis, benign nevi, dermatofibroma, and sclerosing hemangioma. Current opinion discourages the use of incisional biopsy as a diagnostic procedure for melanoma. Rather, the entire lesion should be excised with a margin of several centimeters, if possible, to avoid dissemination of malignant cells. However, some surgeons feel, as we do, that with large lesions proper incisional biopsy allows a sounder decision about a radical or disfiguring procedure. Frozen-section studies are too unreliable unless the histology is classic.

There has been some disagreement about the treatment of melanoma. Pack, Scharnagel, and Morfit (1945)¹⁰ advocated such radical procedure as amputation of extremities or extensive fascial dissection in continuity with node dissection. Other surgeons classify the lesion (superficial, invasive, or amelanotic) by excision and base their judgment about future management on whether there is regional lymph-node involvement. With all three types of melanoma the primary lesion should be excised widely, allowing a 5- to 7.5-cm. margin if possible and including any underlying fascia (Brown and Byars, 1940¹¹ and Conway and Jerome, 1954¹²). Whether it is advisable or even possible to dissect the regional lymph nodes with reasonable hope of benefit is of course a question to be judged separately on the basis of the type and location of the lesion and the surgeon's convictions about the efficacy and justification of radical surgery.

Allen in 1949¹³ reported on his study of 362 cases of malignant melanoma undertaken in an effort to differentiate the fatal from the nonfatal melanocarcinoma. He gained the impression that there is no

distinguishing histological feature which permits this prediction but that, in general, those with a superficial skin melanoma have a quite high survival rate compared with those with a superficial lesion located on a mucosal surface. Although distant metastases usually occur early, when the nose is the primary site of the malignancy, metastases occur late. In Pack et al.'s series of 1,190 cases of melanoma (1952¹), there was a five-year over-all survival rate of 21.4%, with 15.8% for men and 27.4% for women. Webster, Stevenson, and Stout (1944)³ concluded from a study of 68 cases that 24% had been given inadequate surgical treatment.

At the Memorial Center for Cancer and Allied Diseases in 1963 a 20-year series of 825 patients was analyzed for survival figures by McNeer and Das Gupta (Converse, 1964¹⁴). Three groups emerged:

1) Those with melanoma confined to the primary site with histologically negative nodes: 71% survived for five years and 62% survived for 10 years.

2) Those with melanoma involving only the regional lymph nodes: 19% survived for five years and 12% survived for 10 years.

3) Those with histologically proved distant metastases: no patient survived for five years,

PROCEDURE OF CHOICE

For defects of the nose which are too large for reconstruction by a local or a composite graft, some sort of forehead flap is the method of choice because of its proximity to the nose, its similarity in color and texture, and its excellent blood supply. The scalping-flap technique of Converse (1942)¹⁵ was chosen for this particular case. The natural objection to a forehead flap is the secondary scarring in a visible area. There are several techniques for minimizing this defect:

1) The Kazanjian midline flap¹⁶ leaves only a single verticle closure in the rent between the two intact frontalis muscles. The ultimate scar can be almost invisible.

2) If the donor site is chosen far to the side of the forehead, the defect is less visible in the full-face view.

3) "Blush-area" skin (postauricular or supraclavicular), as opposed to a skin graft from other body areas, blends well with the forehead in covering the secondary defect.

4) Care must be exerted to preserve the frontalis muscle because its

damage can result in a noticeable absence of expression of the forehead.

For the sake of completeness it should be mentioned that pedicle flaps from a distance may also be used for nasal reconstruction. The classic example is the Tagliacozzi¹⁷ arm-to-nose pedicle. However, this is not only inconvenient but cannot compare in color and texture match to the forehead skin.

In planning any forehead flap it is useful to use the "design in reverse" technique, by which a pattern of the amount of tissue required is designed from a piece of semirigid cloth or plastic material held over the defect. This is transferred to the donor site on the forehead and the carrying portion of the flap is designed on the scalp. The template is cut to correspond exactly to the size and configuration of the combined forehead and scalp flap. With the template fixed at the estimated point of rotation of the flap, the pattern is brought down over the nasal defect and adjustments made in its size and shape until there is no tension on the flap and there is adequate material over the nose for reconstruction. The template is then autoclaved at the time of operation and the process reestimated for accuracy prior to the first incision. This maneuver was carried out in this case.

The scalping flap is an extension by Converse (1942)¹⁵ of Gillies' "up and down" mid-forehead flap (1935).¹⁸ The advantage is in the concealment of most of the incisions within the scalp and the placement of the donor defect in the relatively inconspicuous far side of the forehead. If care is taken to preserve both frontalis muscles, and if a full-thickness supraclavicular graft is applied to the forehead defect, both expression and skin coverage remain normal.

This patient was fully rehabilitated and once again assumed the complete care of his invalid wife. A quiet man, he paid us the compliment of discarding the gauze dressing which for so many months he wore to conceal his nasal defect. According to a neighbor, the patient died quietly at home of natural causes on October 4, 1969.

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